

We claim:

1. A method comprising:

at a wireless subscriber unit:

- switching from a sleep mode of operation to an active mode of operation;
- receiving a beacon message on a wireless local area network communication resource from an access point;
- when voice information exists to transmit, determining:
  - a first time when transmissions from the access point during a service interval period will likely conclude; and
  - a second time, subsequent to the first time, to contend for an opportunity to transmit the voice information.

2. The method of claim 1 wherein receiving a beacon message comprises receiving the beacon message at a previously scheduled time.

3. The method of claim 1 wherein receiving a beacon message comprises recovering information from the beacon message that identifies subscriber units to whom the access point will next be transmitting targeted information.

4. The method of claim 3 wherein determining a first time when transmissions from the access point during a service interval period will likely conclude comprises estimating the first time as a function, at least in part, of the information that identifies subscriber units to whom the access point will next be transmitting targeted information.

5. The method of claim 4 wherein determining a second time to contend for an opportunity to transmit the voice information comprises potentially selecting a second time that is within a service interval period that supports the beacon message.

6. The method of claim 1 wherein determining a first time when transmissions from the access point during a service interval period will likely conclude comprises:

- receiving information from the access point;
- using the information from the access point to determine the first time.

7. The method of claim 6 wherein receiving information from the access point comprises receiving information from the access point that comprises at least an estimate of the first time.
8. The method of claim 6 wherein receiving information from the access point comprises receiving information from the access point that can be used by the subscriber unit to at least estimate the first time.
9. The method of claim 8 wherein receiving information from the access point that can be used by the subscriber unit to at least estimate the first time comprises receiving information that comprises an indication of a quantity of data to be transmitted by the access point.
10. The method of claim 9 wherein receiving information that comprises an indication of a quantity of data to be transmitted by the access point comprises receiving information that comprises an indication of a quantity of data to be transmitted by the access point during a service interval period.
11. The method of claim 1 wherein determining a second time to contend for an opportunity to transmit the voice information comprises selecting a second time in at least a substantially pseudo-random fashion.
12. The method of claim 11 wherein selecting a second time in at least a substantially pseudo-random fashion comprises selecting the second time in at least a substantially pseudo-random fashion within a predetermined range of available times.
13. The method of claim 1 wherein, when the beacon message identifies the subscriber unit as being a subscriber unit to which the access point will transmit voice data:
  - receiving a voice data transmission from the access point during a service interval period that supports the beacon message.
14. The method of claim 13 and further comprising transmitting an acknowledgment message to the access point subsequent to receiving the voice data transmission.

15. The method of claim 1 and further comprising:

- at the second time, transmitting a message to the access point to thereby contend for the wireless local area network communication resource to transmit the voice information.

16. The method of claim 15 and further comprising:

- switching from an active mode of operation to a sleep mode of operation.

17. The method of claim 16 wherein switching from an active mode of operation to a sleep mode of operation further comprises receiving an acknowledgement message from the access point in response to transmission of the voice information.

18. The method of claim 16 wherein switching from an active mode of operation to a sleep mode of operation comprises scheduling a next time to switch to an active mode of operation.

19. The method of claim 18 wherein scheduling a next time to switch to an active mode of operation comprises scheduling the next time as a function, at least in part, of a next scheduled service interval period from the access point.

20. The method of claim 1 and further comprising, when voice information exists to transmit, switching from the active mode of operation to the sleep mode of operation prior to the second time.

21. The method of claim 20 and further comprising scheduling a time, prior to the second time, to switch from the sleep mode of operation to the active mode of operation to thereby permit transmission of the voice information.

22. A method comprising the steps of:

at an access point for a wireless local area network providing services to a plurality of subscriber units:

- determining those subscriber units of the plurality of subscriber units for which the access point currently has data to transmit;
- preparing a beacon message that identifies those subscriber units for which the access point currently has data to transmit but not those subscriber units for which the access point currently has no data to transmit;
- transmitting, during a service interval period, the beacon message;
- transmitting, during the service interval period, data to those subscriber units that were identified in the beacon message;
- subsequent to transmitting the data to those subscriber units that were identified in the beacon message, receiving voice data transmissions from any of the subscriber units on a contention basis regardless of whether such voice data transmissions are sourced during the service interval period or subsequent thereto.

23. The method of claim 22 wherein transmitting, during the service interval period, data to those subscriber units that were identified in the beacon message comprises transmitting data to those subscriber units in an order that corresponds to an order in which the subscriber units are identified in the beacon message.

24. The method of claim 22 wherein preparing a beacon message that identifies those subscriber units for which the access point currently has data to transmit comprises placing those subscriber units into a particular order as a function of at least a first criteria.

25. The method of claim 24 wherein the first criteria comprises at least one of:

- a priority level as corresponds to at least some of the subscriber units;
- recent communications activity of at least some of the subscriber units;
- a relative size of the data to be transmitted to those subscriber units; and
- information regarding present power reserves of at least some of the subscriber units.

26. The method of claim 22 and further comprising:

- in response to receiving a voice data transmission, transmitting an acknowledgement message to the subscriber unit that sourced the received voice data transmission.

27. A wireless local area network subscriber unit having voice transmission capability, comprising:
  - a wireless transceiver that is compatible with a wireless local area network communication resource;
  - a controller that is operably coupled to the wireless transceiver and that has an active mode of operation and a sleep mode of operation;
  - a local voice transducer and speech processor that is operably coupled to the controller;
  - a memory that is operably coupled to the controller wherein the memory has stored therein, at least from time to time:
    - an estimated time as to when transmissions from an access point for the wireless local area network will conclude during a service interval period;
    - a selected transmission time, subsequent to the estimated time, when the controller will cause the wireless transceiver to transmit to the access point to thereby contend for the wireless local area network communication resource when the subscriber unit has voice data to transmit, which selected transmission time can potentially be either during a service interval period or subsequent to the service interval period.
28. The wireless local area network subscriber unit of claim 27 wherein the wireless local area network communication resource is compatible with 802.11.
29. The wireless local area network subscriber unit of claim 27 wherein the controller comprises estimation means for estimating the estimated time as a function, at least in part, of the contents of a beacon message from the access point.
30. The wireless local area network subscriber unit of claim 29 wherein the controller further comprises scheduling means for scheduling the selected transmission time as a function, at least in part, of the estimated time.
31. The wireless local area network subscriber unit of claim 30 wherein the scheduling means further schedules the selected transmission time in at least a pseudo-random fashion.

32. The wireless local area network subscriber unit of claim 31 wherein the controller further comprises sleep means for switching the subscriber unit from the active mode of operation to the sleep mode of operation subsequent to transmitting the voice data to the access point at the selected transmission time.